REDJACKET®

Field Service Bulletin

Date: January 23, 2001
Attention: Red Jacket Distributors

Subject: **Cooling Principle of the LPG Submersible Pump**

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The submersible pump motors are explosion-proof type (EEx ed IIB T3) designed to permit the LPG fuel to flow through and around the motor.

A calculated amount of LPG fuel flows through the motor for cooling and lubrication of the unit, including bottom and top bearings.

The pumped LPG liquid flows from the pump-unit through four inlet-holes into the motor unit. The liquid flows between the stainless-steel shell and the stator to the receptacle housing (top section of the motor) and is cooling the motor.

The bottom-end housing (with bottom bearing) is installed with two so-called breathers (flame barrier). Approximately 20 liters/min. liquid is pressed through the two inlet breathers in the bottom-end housing.

Through the liquid groove in the bearing, this amount of liquid is forced between the rotor and the stator to the upper-end housing and lubricates the motor. Through the liquid groove of the top bearing, installed in the upper-end housing, the liquid passes through the breather (flame-barrier) installed in the receptacle housing. This amount of liquid passes through a non-adjustable bypass back into the manifold.

Maximum temperature increase, caused by the cooling of the motor section, is approximately 12º C above ambient temperature of the LPG liquid, at normal working circumstances.

In practice, the maximum temperature of the liquid passing the internal bypass never exceeds the temperature of 35 -38º C (ambient temperature of liquid between 5º C and 26ºC).

The section with the pigtail (discharge head) consists of a metal body (Ex 'd' flameproof enclosure) and electrical connections (Ex 'e' increased safety). The wires in the connectors are cast in epoxy. The stator is fitted with a containment shell of sheet metal and the windings are fully cast in epoxy.

General:
- **Never run a submersible pump dry or below a minimum differential pressure of 4 Bar (400kPa)**
- **Never run a submersible pump below minimum required flow-rate**
- **Temperature rate:** - 45º C to + 40º C
- **System pressure:** Max. 25 Bar
- **Technical installations:** According to CEN/TC 286/WG 6/SG 6 N 23 R12
- **Electric connection:** According to local regulation.
- NEN 1010 & NEN 3413 (Electrical components in Hazardous Areas)
- VDE 0100 & VDE 0165 (Electrical components in Hazardous Areas)

FSB-313

Specifications Submersible Pumps:

Model No	Volts	Hz	PH	HP	RPM	FLA	SFA	Length (ex. Discharge-head)
P300V17	380-415	50	3	3	2875	5.4	5.4	625mm + 795mm = 1420mm
P500V17	380-415	50	3	5	2875	8.8	8.8	780mm + 1030mm = 1810mm

Design specifications:

LPG300V17-21
70 liter/min by 6.8 Bar (max. efficiency)
Max pressure 9.2 Bar
Capacity Internal bypass at max. pressure: liter/min
Minimum flow; not required.
Designed for 2 nozzles of 35 liters/ min. simultaneously.

LPG500V17-24
130 liter/min by 8.1 Bar (max. efficiency)
Max pressure 11.75 Bar
Capacity Internal bypass at max. pressure: liter/min
Minimum flow 25 liters per minute
Designed for 4-5 nozzles of 35 liters/min. simultaneously or 150 liters/min for one nozzle.

Receptacle housing With Breather

Liquid groove

Bottom-end housing with bearing and breather

Shaft Rotor